UCRL-JC-123822 Abs

Compact Airborne Multispectral Imager

Alex Pertica
Lawrence Livermore National Laboratory
PO Box 808, L-183
Livermore, CA 94550
Phone: (510) 423-3354
Fax: (510) 422-2499
Email: pertica@mafalda.llnl.gov

The Compact Airborne Multispectral Imager (CAMI) is a framing imager designed for airborne spot survey applications based on collection of ground reflectivity data. This system has applications in environmental monitoring and pollution assessment. CAMI employs two electronically-tunable liquid-crystal-based narrow bandpass filters in conjunction with intensified CCD focal planes to generate images in 62 distinct bands in the range 400-1000 nm. Images are obtained successively through the filter as the filter passband is tuned to selected wavelengths. Images are acquired at a 10 Hz rate and each filter can be tuned to any wavelength in random order across its respective tuning range of either 400-700 nm or 700-1000 nm. The system is extremely compact; the camera payload is housed in a four-axis gyro-stabilized turret that is aircraft ready. The image handling system incorporates a frame grabber that digitizes the analog output of the two cameras. The framing (as opposed to pushbroom or whiskbroom) architecture of this imager supports data collection modes which are consistent with real time hyperspectral image processing. Thus, this system can be used as a finder to cue other instruments.

CAMI has been built and flight tested on an Air Force RC-135 aircraft. CAMI is housed in a 14" gimbal that is compatible with many small fixed wing aircraft. Our goal is to demonstrate capability for a variety of applications.

*This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.